

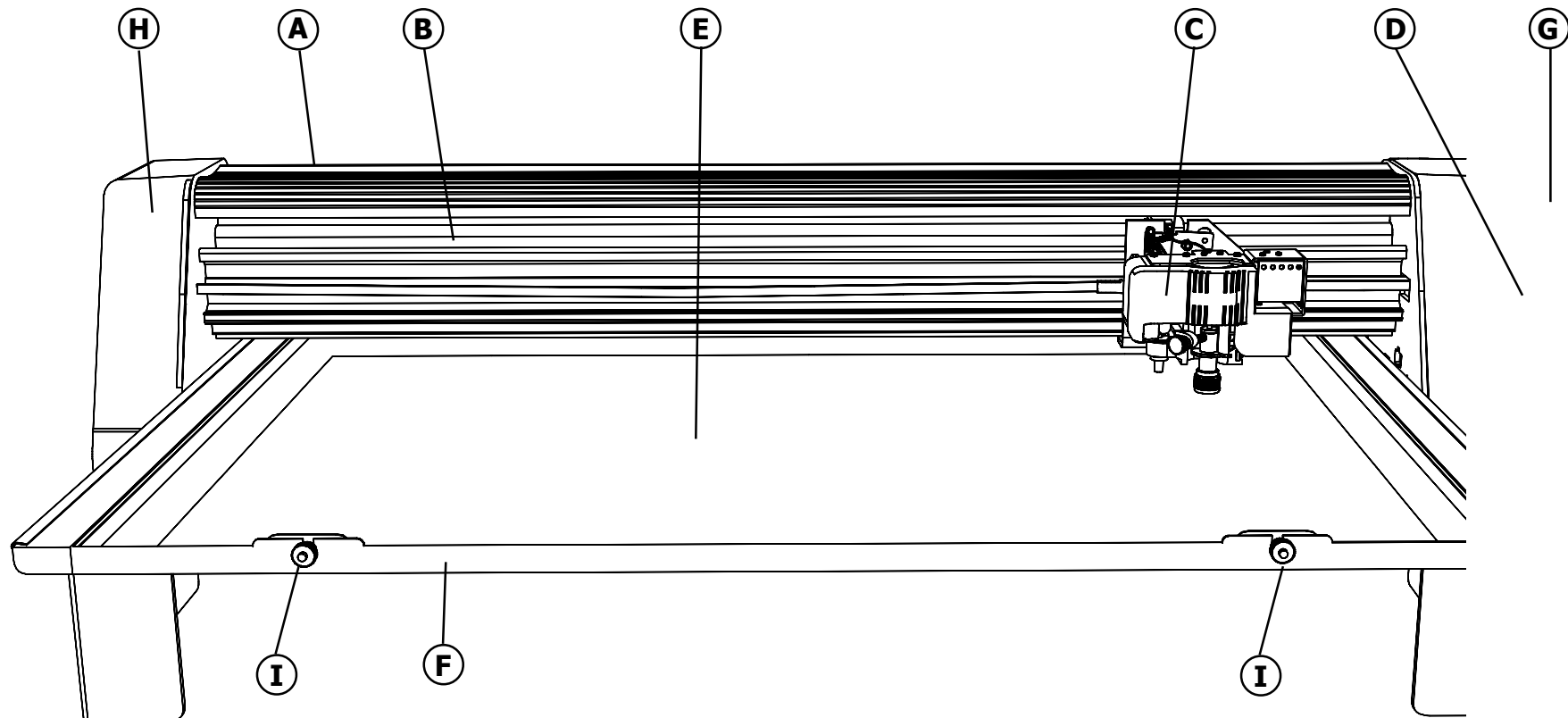
USING YOUR

IOLINE™

**300 System
Cutter**



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July, 2002
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300 System Cutter

- A. Dust Cover
- B. Traverse
- C. Carriage
- D. Keypad
- E. Removable Tray
- F. Fixed Tray (Table)
- G. Right Side Cover
- H. Left Side Cover
- I. Removable tray "Thumb Screw"

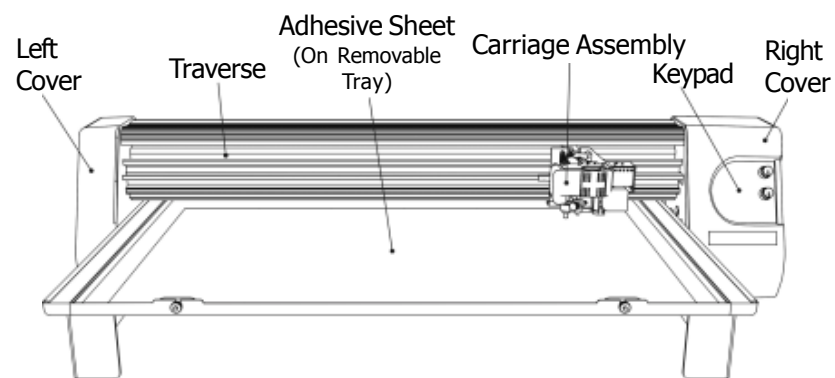


Fig. 1 - 300 System (With Removable Tray) Front View

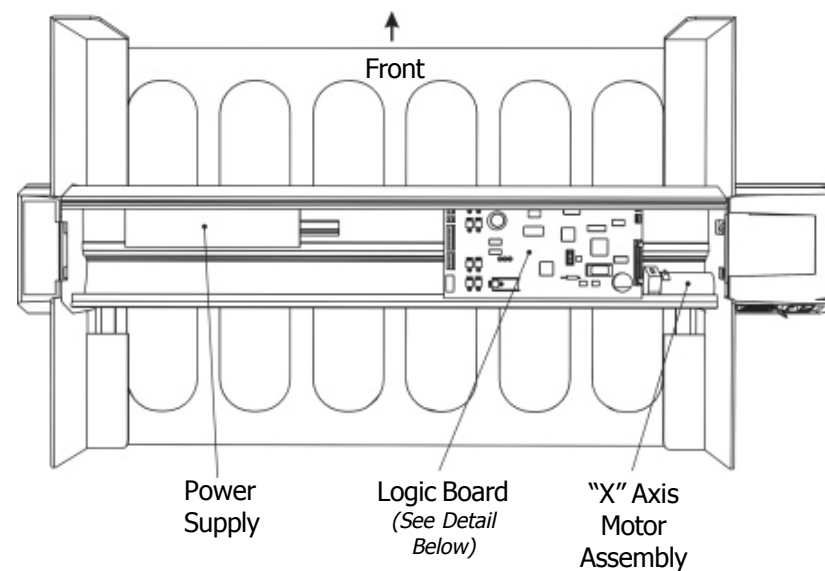


Fig. 3 - 300 Cutter (Bottom View with bottom cover removed)

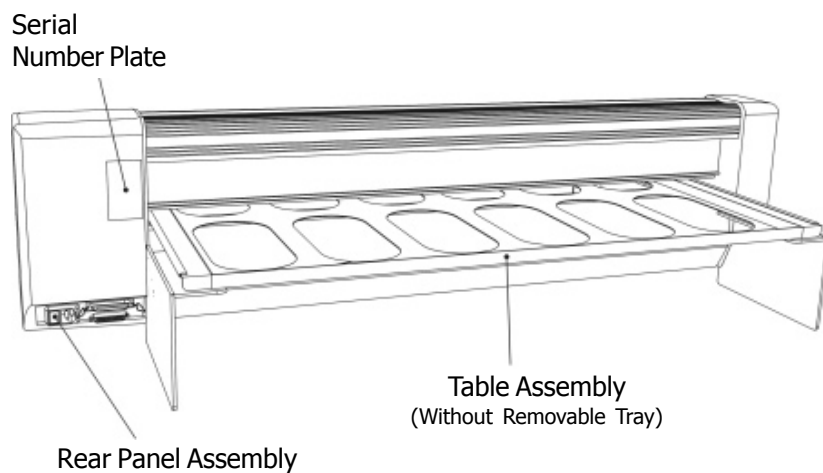


Fig. 2 - 300 System (Without Removable Tray) Rear View

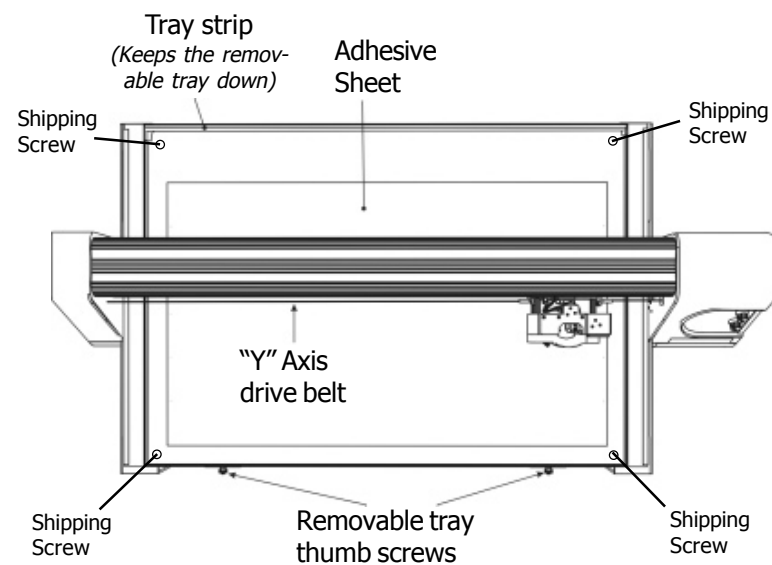


Fig. 4 - 300 Cutter (Top View)

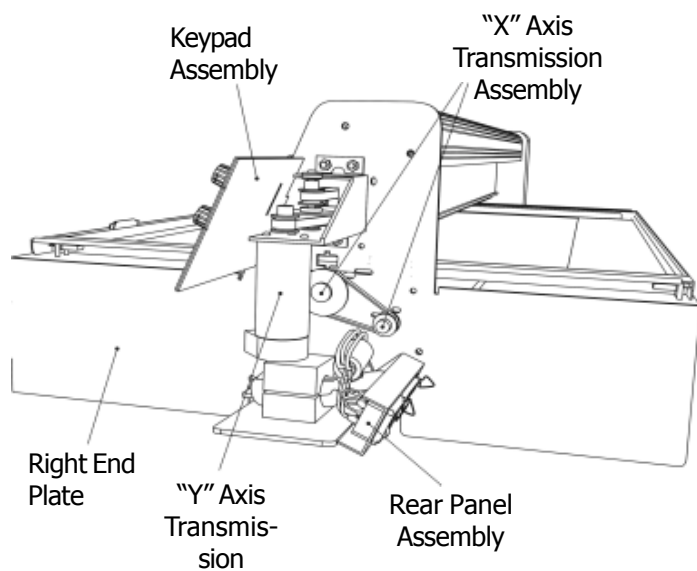


Fig. 5 - 300 Cutter (Right view with cover removed)

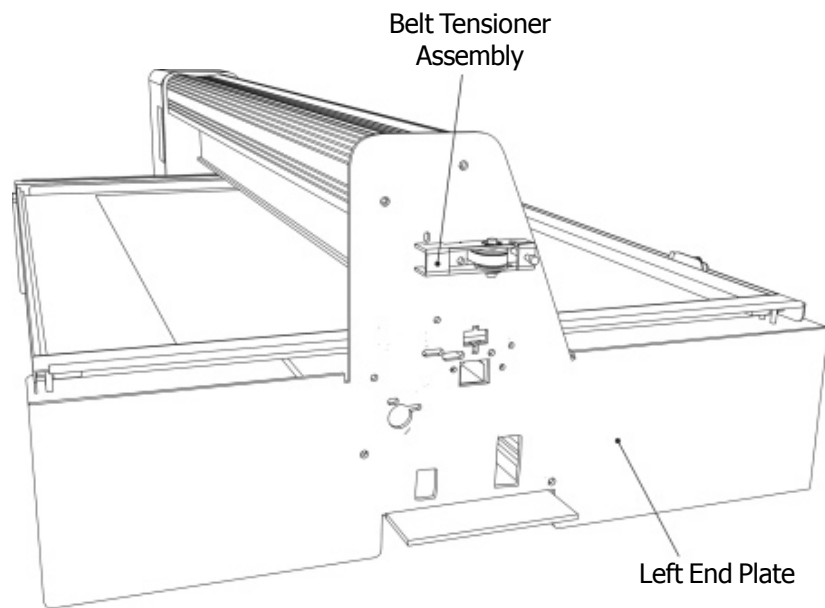


Fig. 6 - 300 Cutter (Left view with cover removed)

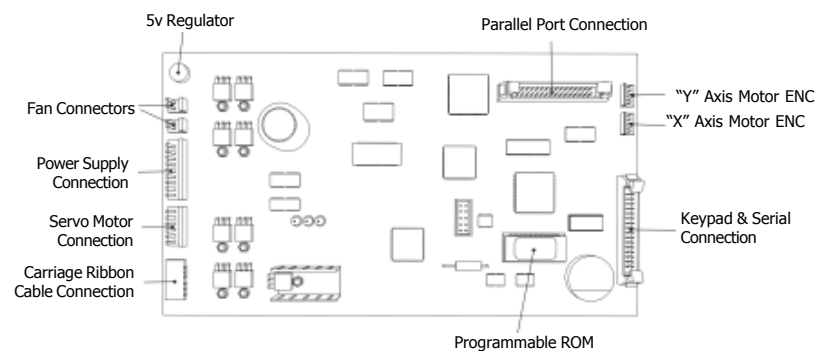


Fig. 7 - Logic Board

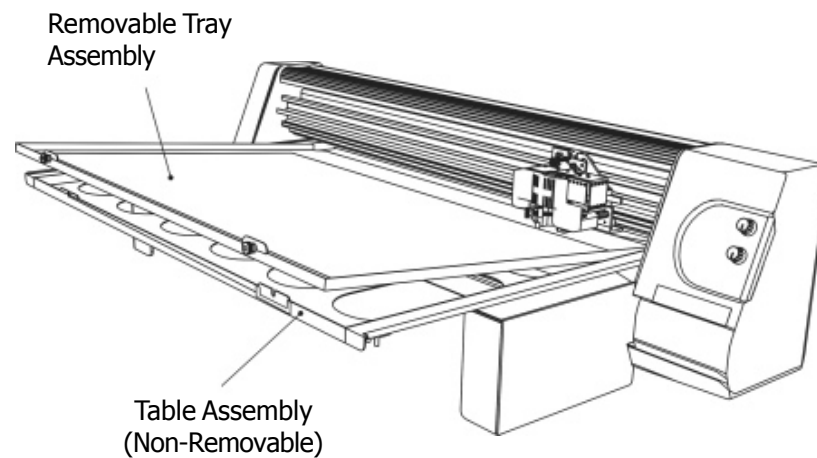


Fig. 8 - Tray & Table Assembly

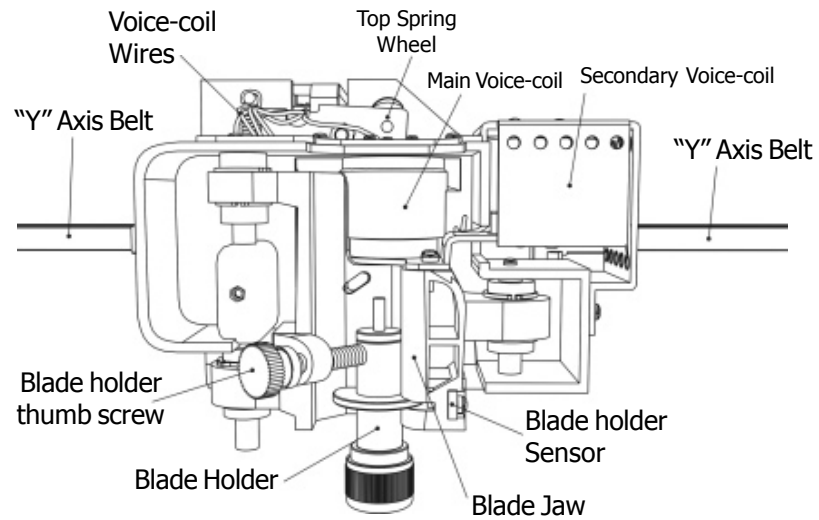
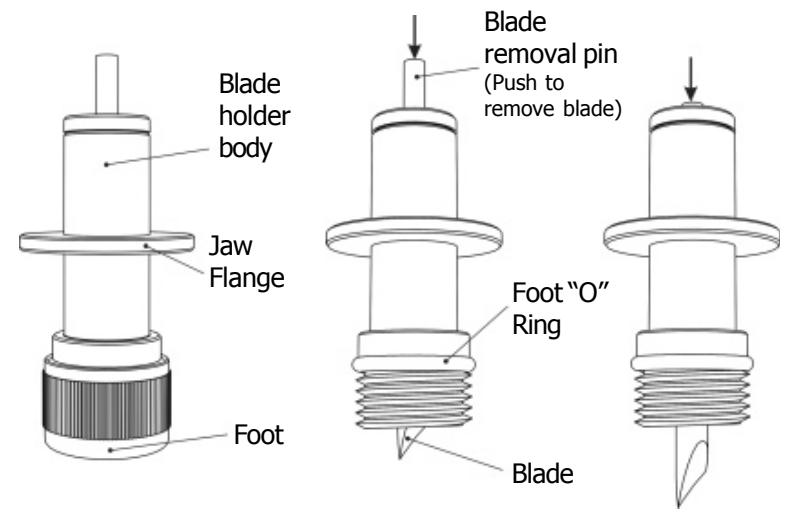


Fig. 9 - Carriage Assembly (With Blade holder installed)



**Fig. 11 - Blade Holder Assy 1) With foot 2) With foot removed
3) Removing blade**

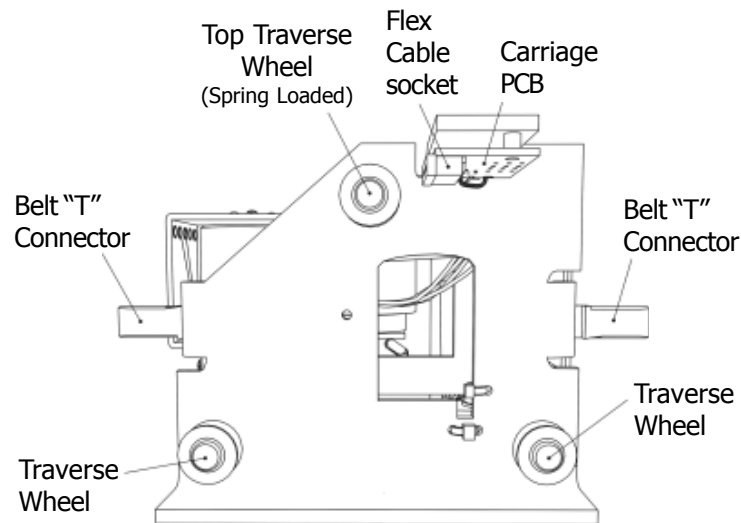


Fig. 10 - Carriage Assembly (Rear View)

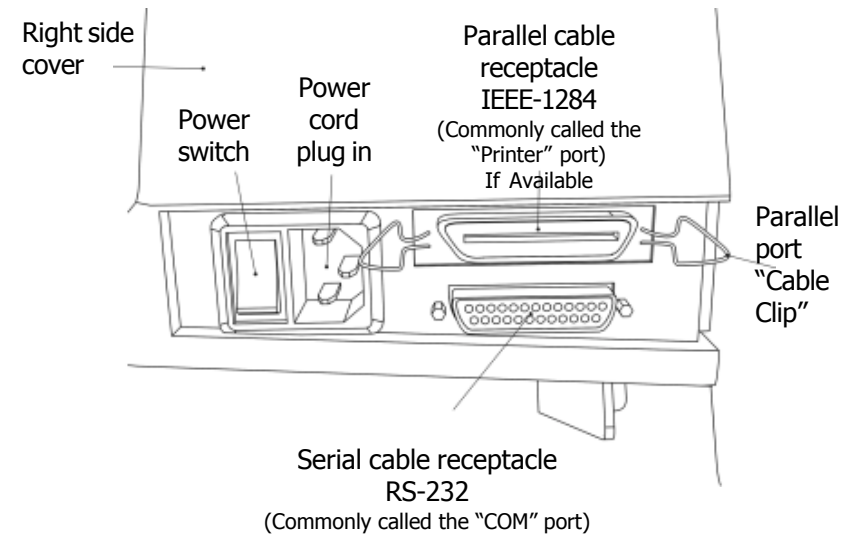


Fig. 12 - Rear Panel Assembly

Table of Contents

300 System Cutter	8
Safety and Precautions	8
Installation	9
Unpack the 300 Cutter	9
Prepare the Area	9
Connect the Cutter to the Computer	9
Installing the Hardlock Key	9
Software Installation	10
Installing the 301 & Control Center Software	10
Keypad Controls	11
Start/Stop	11
Arrow Keys	11
Set Origin	11
Speed	11
Force	11
Test Cut	12
Repeat	12
The Ioline Control Center	12
Changing System Settings	13
Screen Menu Options	13
Measurement Units	13
Panel Size	13
Scale	13
Update Display	13
Send Settings to Cutter: Temporary	13
Send Settings to Cutter: Permanent	13
Acceleration	13
Up/Down Delays	13
Force	14
Blade Overcut	14
Blade Steering Arc	14
Blade Offset	14
Minimum Angle	14
Menu Bar Items	14
File	14
Send Cut/Plot File	14
Open Settings File	14
Save Settings As...	14
Exit	14

Setup	14
Plotter Setup	15
Com Port Setup	15
Display	15
Plotter Settings	15
Factory Defaults	15
ROM Version	15
Memory Buffer	15
Blade Holder Status	15
Motor Voltage	15
Options	15
Filtering	15
HPGL Setting...	15
Install New Firmware version	15
Calibration	16
Calibrate Plotter	16
Test	16
Serial Test	16
Computer Port Test.	16
Plotter Port Test.	16
Help	16
Contents	16
About	16
Cutting Material	17
Loading the Material	17
Installing a Blade and the Blade Foot	17
Installing a Blade Holder or Pen	18
Adjusting Blade Exposure and Force	18
Adjusting Blade Exposure:	18
Force Adjustment:	19
Verification:	19
Sending a Cut/Plot File to the 300 System Cutter	19
Pausing Cutting	19
Canceling a Cut	19
Suggested Settings	20
Advanced Cutting	21
How to "KISS-CUT"	21
Communication Testing	23
Communication Test	23
Testing the 300 System cutter Serial Port	23
Testing the Computer Serial Port	23
Repair and Maintenance	24

Cleaning the Traverse Extrusion and Carriage Wheels	24
Cleaning the Blade Holder	24
General Disassembly Procedures	25
Removing the End Covers	25
Removing the Bottom Cover for Internal Access	26
Troubleshooting	27
Common Problems	27
Error Messages	28
Software Errors:	28
L.E.D Codes	29
Troubleshooting the Parallel Port	29
End Notes	30
Getting Help	30
The FCC Wants You to Know... ..	31
Your Comments Are Requested	31
Customer Service	31
Limit of Liability Statement	31
Index	32

300 SYSTEM CUTTER

The Ioline 300 System Cutter provides a simple and economical method for cutting patterns to be attached to athletic uniforms or other commercial products. The Ioline 301 software provides the fastest possible method for creating sew disks for automated sewing machines. It also cuts patterns from a wide variety of file types.

This guide will show you how to successfully install and operate these products. By following the instructions, you will benefit from the experience gained during hundreds of Ioline installations. You will quickly learn how to:

- Cut applique materials using designs from Tajima.Ext, Melco.EXP, Barudan.DAT or Toyota.10o formats. After sewing, these cut pieces will be exactly covered by embroidery machine stitches. *See Using 301 Software for more detailed information.*
- Cut applique materials from designs created in CorelDRAW or other compatible software. These cut pieces can then be heat pressed or sewn onto garments.
- Automatically create sew disks from outlines created in CorelDRAW. For designs stitched around the outline only, such as sports lettering, you will find Ioline's 301 software faster and easier to learn than most embroidery design software. (If you are installing the Ioline 301 software without the cutter, proceed directly to the **"Install Software"** chapter.)
- Prepare a wide variety of fabrics for successful cutting.
- Control "Puckering", and "Fraying" in difficult materials.
- Use CorelDRAW to create text and multi color designs.

Important: Before installation, read the installation requirements to make sure you have everything you will need. When you are ready, follow the installation instructions step by step. Following these steps will help you save time and money. For unresolved questions, contact Ioline Tech Support at (425) 398-8282, or e-mail to: techsupport@ioline.com.

SAFETY AND PRECAUTIONS

Please read these safety guidelines before beginning operation of the Ioline 300 Cutter. The cutter uses a very sharp blade when cutting. The parts can move quickly. Always observe the following safety precautions:

- Keep your body away from the front of the cutter. The tray moves freely in this space while the cutter is in operation.
- Do not try to repair the machine without factory authorization. Only qualified service personnel should attempt any disassembly or access to internal components. If external mechanical adjustments are necessary, turn off the cutter and disconnect it from all power sources (both the computer and the wall outlet).
- Be careful with hair, jewelry, or loose clothing near the machine. Don't allow them to become caught in the mechanical parts.
- Never move the carriage (the part that carries the blade holder) or the tray, by hand while the power is on. Use the Arrow keys and let the machine do it.
- Keep hands away from the carriage when the cutter is in operation.
- Use caution when changing a blade in the blade holder. See **"Installing a Blade & Blade foot"** for the recommended procedure.
- Be careful when handling the blades. They are sharp and could cause an injury if mishandled. Although the blades are made of an extremely hard material, they are brittle and can break if dropped or mishandled.

INSTALLATION

Unpack the 300 Cutter

Warning: Do not lift the cutter by the tray, the dust cover, or the carriage rail. This may permanently damage the cutter. Use the bottom surfaces of the cutter to lift or move it.

- 1) Inspect the outside of the box first to see if there may be damage to the machine.
- 2) Carefully remove the cutter from the box and place it on a flat-stable surface. This procedure requires two people. Save all packing materials and the box. Check the packing list to ensure that all of the accessories are present.
- 3) Look for the 4 (four) screws, one holding each corner of the table assembly (See Fig. 4 for the location of the table assembly shipping screws). Remove the screws from the table assembly.

Prepare the Area

Prepare a large clean area to work. Make sure the table top is clean and clear of any obstacles. Pull the cutter away from the wall so the material tray can move freely in the back.

Connect the Cutter to the Computer

Note: Make sure the computer and the cutter have the power turned off. Ioline recommends using a surge protector power strip for the cutter and the computer.

Start by plugging in the 301 “Hardlock” (Dongle) into the Parallel port on the back of the computer. This is a black box with a 25 pin port on both ends, and a clear window that says “E-Y-E”. If you have other devices plugged into the parallel port, the hardlock key can be used as a “Pass-Through” for those devices.

Connect the 300 System to the computer with the included serial cable. A serial connection to the cutter is required for correct operation.

The parallel port receptacle on the computer is a 25 pin female receptacle. The serial port is a 9 pin male receptacle. If the computer has a 25 pin serial port, a 9 to 25 pin adapter is required. The plotter will not function if a serial cable is connected to a parallel port.

Installing the Hardlock Key

The Hardlock key (common name for this device is a “Dongle”) is a device that allows you to use the 301 software. Without it, the software will not work. The Hardlock key comes with the 300 system cutter in the accessory kit, and plugs into the computer printer (LPT) port. (See Fig. 13 & 14).

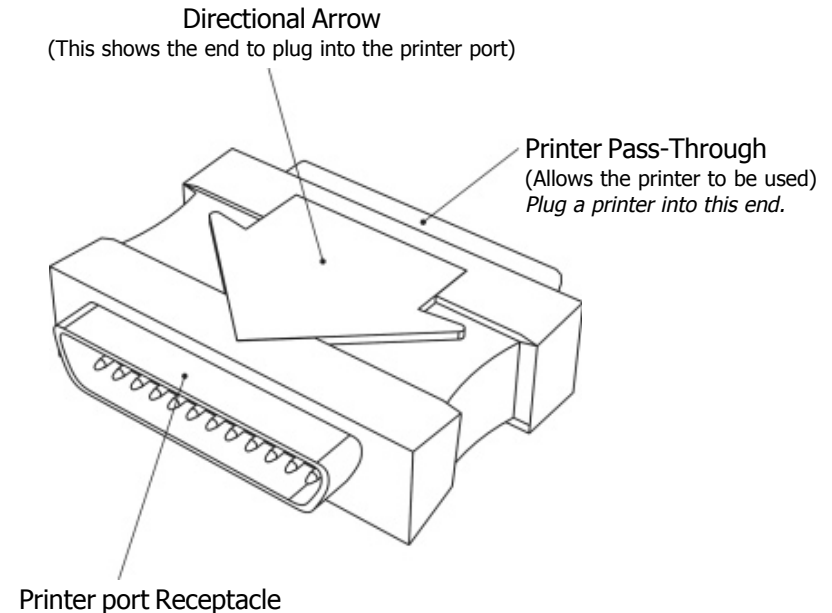


Fig. 13 - 301 Software Hardlock Key

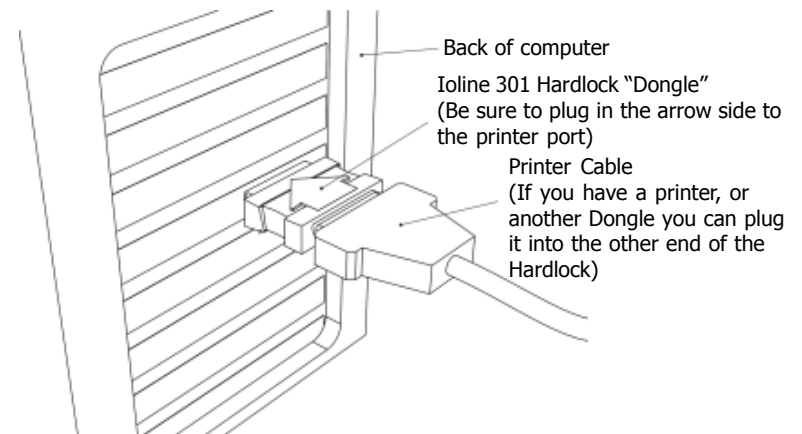


Fig. 14 - Rear view of computer showing correct installation of the Hardlock and printer cable.

SOFTWARE INSTALLATION

Installing the 301 & Control Center Software

1. Turn on the power to the computer and start Windows®.
2. Insert the Ioline CD ROM into the CD ROM drive (usually D:) In most cases the CD will automatically start to install. Follow the on screen prompts. If the CD doesn't automatically start, continue to step 3.
3. Select the Start button.
4. Choose Run.
5. Type D:\IOSETUP (substitute the correct letter if the CD ROM drive letter is not D:) and Click OK.
6. Follow the instructions that appear on the screen.
7. Consult the *Operation* chapter of this manual for details on using the Ioline Control Center, or the "301 User Guide".

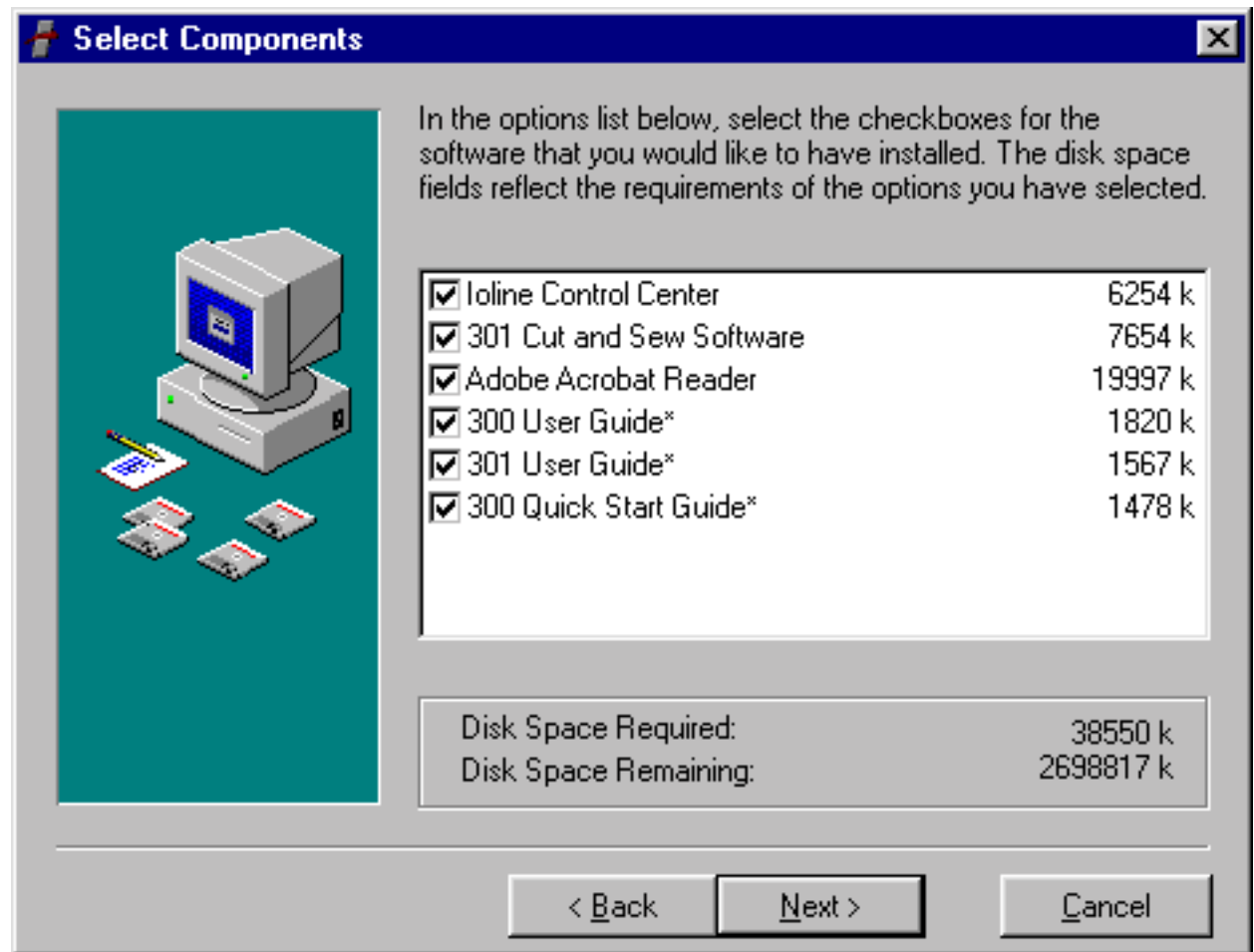


Fig. 15 - 301 and Control Center installation screen

KEYPAD CONTROLS

The keypad allows access to the main 300 System functions.

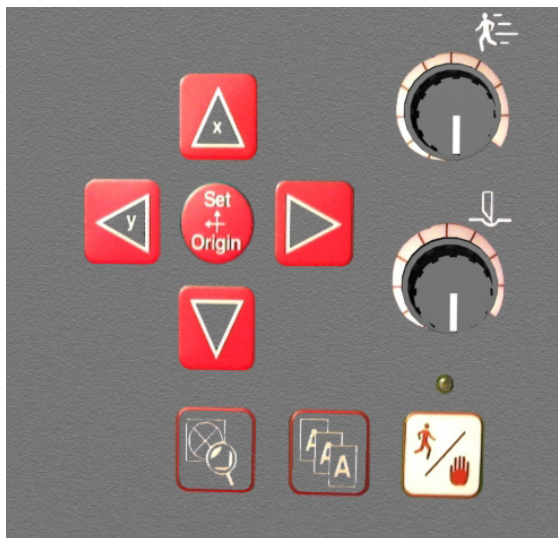


Fig. 16 - *The 300 System Keypad.*

Start/Stop



The **Start/Stop** key connects or disconnects communication between the computer and the cutter. If the **Start/Stop** key is pressed during cutting or plotting (**Stop** mode) the machine will stop when the current vector is finished. The **Arrow** keys are active when in **Stop** mode. When the **Start/Stop** key is pressed again, (**Start** mode) cutting will resume exactly where it stopped.

START green light **Arrow** keys inoperable, cutter
online (ready to receive instructions).

STOP red light **Arrow** keys operable, cutter *off-line*
(not ready to receive instructions).

Arrow Keys



Pressing the **Arrow** keys moves the tray (material) back and forth or the carriage from side to side. The arrow keys will not work unless the cutter is in **Stop** mode (see **Start/Stop** above).

Set Origin



The **Set Origin** key sets the initial origin or starting position for the blade. If a new origin is not set before sending a file to the cutter, the machine will begin at a point determined by the previous cut file. The software may give the option of selecting this ending point. The cutter will then treat the new file as a continuation of the previous cut. This will affect the repeat function. Refer to the **Repeat** section below. To set a new origin, make sure the cutter is in **Stop** mode with the red light on. Use the **Arrow** keys to move the pen or blade to the intended origin of the cut, then press the **Set Origin** key. The cutter will then accept cut/plot files.

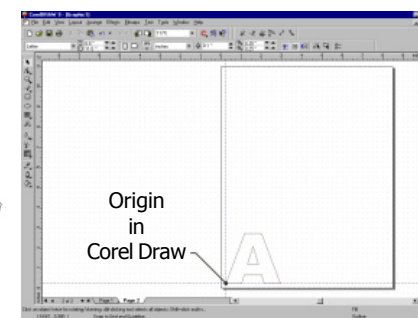
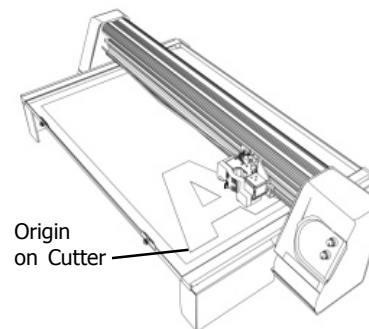


Fig. 17 - *Origin Point.*

Note: Design software usually refers to the origin as “lower left” because it is the lower left corner of a plot. Because the cut is usually oriented as shown.

Speed



Use the **Speed** knob on the front panel of the 300 cutter to adjust the speed. Turn the knob clockwise to increase the speed, or counterclockwise to decrease the speed. Set the speed according to the type of cutting and material being used. See the **Cutting Material** section of this manual.

Force



Adjust the force by using the Force knob on the front panel. Turn the Force knob clockwise to increase the force exerted on the pen or blade. See the section on **Cutting Material** for the recommended settings. The range of force available at the knob is NOT ADJUSTABLE in the Ioline Control Center.

Note: Using too much force can cause excessive drag, damage the pen or blade, tear the material, or cut through the adhesive sheet.

Test Cut



Test Cut

This button will cut a test pattern to help determine the proper force (for blades or pens) and blade exposure for cutting fabric. The test cut will also show the effect of the blade offset and overcut settings in the Control Center. See the section on **Cutting Fabric** for details on adjusting force and blade exposure. The Control Center section has details about blade offset and overcut.

1. Make sure that material is loaded in the cutter that the blade holder is installed in the carriage. Position the blade over the material near the right side of the cutter.
2. Check for the red light. Press the **Start/Stop** key if it is not on.
3. Press the **Test Cut** key for one second. The plotter will cut a small test pattern consisting of a circle within a square.
4. Adjust the force and blade exposure up or down with the **Force** knob and the blade foot. Repeat the test cut until the desired line quality is obtained. See the section on **Cutting Fabric** for details on adjusting force and blade exposure.
5. Successive test cuts will be automatically aligned to the left of the last test cut.
6. If the **Test Cut** key is pressed for three seconds the plotter will cut a 1.9 in. x 7.1 in. pattern (the Ioline Logo).

Repeat



Repeat

Pressing the **Repeat** key will generate one copy of the most recently cut file. The cutter must be in **Stop** mode (red LED) to use the **Repeat** key. To start the cut in a new location, move the pen or blade to a new position with the **Arrow** keys before pressing the **Repeat** key. Repeat will do the following:

1. Individual files are repeatable until the **Set Origin** key is pressed and any new data is sent to the cutter. This includes updating settings with the **Update Display** function.
2. If cut files are sent without setting an origin between them, they will be stored in memory continuously as if they were one file. This allows the user to repeat multiple files as a single group. Pressing **Repeat** will cut all files sent since the last origin was set (as long as the buffer size is not exceeded, see below).
3. If the file(s) sent exceed the capacity of the buffer (1 megabyte) before an origin is set the repeat function is disabled. This feature allows the cutter to handle files of limitless size. When the buffer has overflowed it no longer holds a complete file so repeat would produce unpredictable results.

Note: If an origin is not set between files, two possible unintended results can occur: if the combined cuts do not exceed the buffer, repeat will cause them all to be recut or, if the combined files exceed the buffer size, repeat will be disabled.

THE IOLINE CONTROL CENTER

The **Ioline Control Center** is a utility program that does three things:

- It allows adjustment of settings to tailor output from the computer.
- It allows a completed cut file to be sent to the 300 cutter.
- It includes several diagnostic tests for troubleshooting.

Note: To avoid communication port conflicts, do not simultaneously run more than one application that is communicating with the cutter.

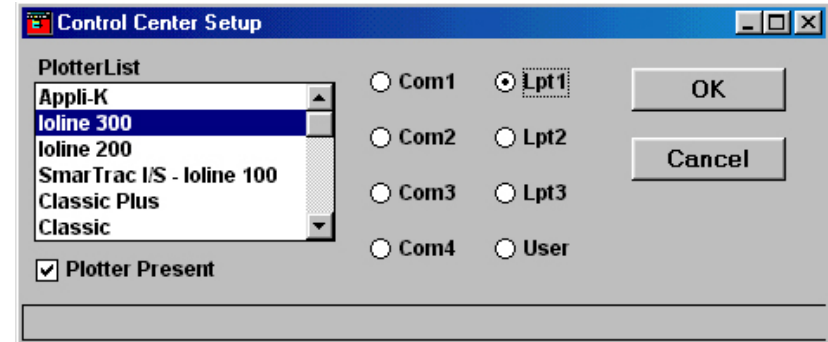


Fig. 18 - Control Center Setup Screen.

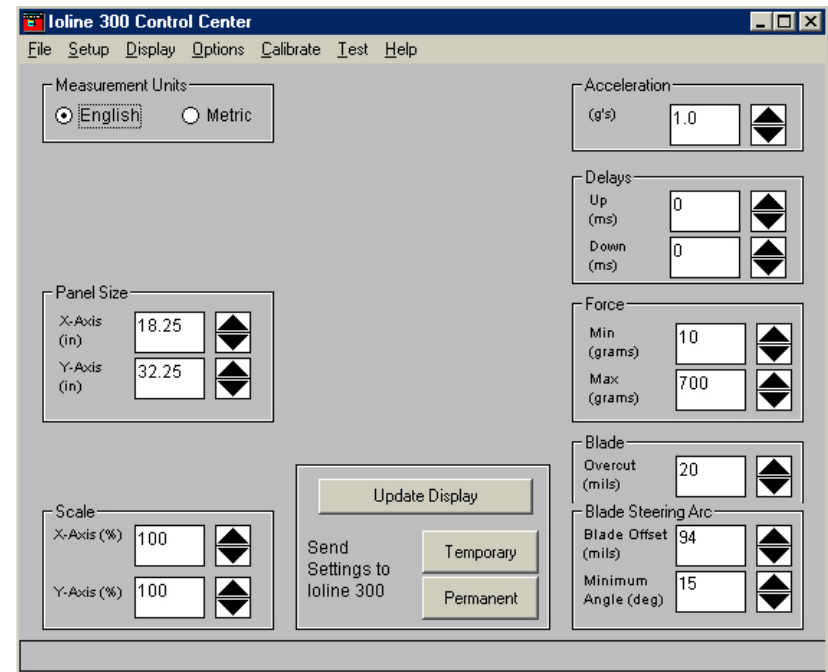


Fig. 19 - Control Center Main Menu.

Changing System Settings

A variety of settings are adjustable to fit specific needs:

- The 300 cutter must be in **Start** mode (green LED on) when changing system settings. Press the **Start/Stop** key and make sure the green keypad light is on before changing any settings.
- The **Screen Menu** displays the primary settings that are adjustable. The **Menu Bar** contains utilities and less common cutter settings.
- The selected changes will be in effect only after one of the **Send Settings** buttons is pushed.

Note: Some design software may to override the Control Center settings. Check to see if it has by pressing the *Update Display* button before and after a cut is completed. If the settings change, use the design software to modify cutting parameters.

SCREEN MENU OPTIONS

Measurement Units

English or Metric units are available when adjusting settings.

Panel Size

The **Panel Size** is the maximum area the cutter can use for cutting. The factory set (and maximum) X-axis panel length is 18.25 inches long (50 cm). The maximum Y-axis panel size is 32.25 inches. The material moves along the X-axis; the carriage moves along the Y-axis.

Scale

The factory-set **Scale** is 100%. The cutter will produce a cut in the exact size of the cut file that is sent. If the scale is 50%, the cutter will produce a cut that is half the file size. The scale of the cutter can range from 1% to 999%. **Note:** Both X and Y axes are set independently.

Update Display

Note: The design software may override the Control Center settings. Check to see if it has by pressing the *Update Display* button before and after a cut is completed. Check the plotter setup screens in the design software to make adjustments if necessary.

Selecting this option will update all of the screen values with the current settings stored in the cutter. For example, using **Update Display** after a blade is inserted in the carriage will update the Control Center force settings.

Send Settings to Cutter: Temporary

After changing any settings on the screen, the changes must be sent to the cutter. If **Send Settings to Cutter: Temporary** is selected, all of the displayed settings will be used for the current session. When the cutter is turned off these settings will be lost and the previous permanent settings will be in effect when the cutter is turned on again. If any settings are changed, repeat the **Test Cut** procedure to ensure that the results are satisfactory.

Send Settings to Cutter: Permanent

If **Send Settings to Cutter: Permanent** is selected, all of the displayed settings will be sent to the cutter and are saved for all subsequent sessions, even after turning off the cutter.

Acceleration

The factory set acceleration is 1.0 g. The acceleration setting determines how quickly the pen or blade will reach full speed when starting or ending a cut line. Use the Control Center to change the setting within a range of 0.1 to 1.0 g. For time consuming or difficult cuts, or when trying to achieve maximum accuracy, use lower acceleration settings.

Up/Down Delays

The factory setup and down delays are both 0 milliseconds (ms) or 0 thousandths of a second. The delay setting controls the amount of time, in milliseconds, the cutter pauses after lifting or lowering the pen or blade. Under normal circumstances this setting will not require adjustment. Thick material (e.g. Felt) may require a delay of 25 to 50 ms.

Force

The minimum and maximum force settings for the **Force** control knob on the keypad are adjustable by turning the knob, but in the Control Center the values are fixed. The factory set and default minimum is 10 grams. The maximum value is 700 grams.

Blade Overcut

Blade overcut is the distance the blade travels beyond the end of a cut. Blade overcut ensures that each cut actually reaches the point where one cut line meets and slightly overlaps another cut line. This ensures that all of the pieces of the design are cut completely, with no undercuts. The factory set blade overcut is 10 mils. This setting is ignored when a pen is installed in the carriage.

Blade Steering Arc

Blade Offset

The blade offset is nominally .094 mils, but specific blades can vary within a tolerance. For close work, making some tiny test cuts at several settings, then picking the best one, can improve accuracy. This setting is ignored when a pen is installed in the carriage.

Minimum Angle

This is the minimum angle for which the signcutter blade will perform a blade steering arc. For a very tiny cut, a small or zero angle can be specified. For larger cuts a greater angle of up to 45 degrees is best. The factory set value works well with most files. Adjusting this setting for small cuts may improve performance. This setting is ignored when a pen is installed in the carriage.

MENU BAR ITEMS

The menu items along the top of the screen allow adjustment of a variety of settings for computer control of the Ioline plotter. File management, plotter setup and serial port testing can all be accessed from the menu bar.

File

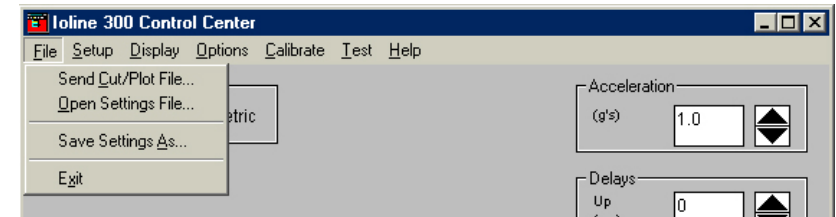


Fig. 20 - File Menu

Send Cut/Plot File

Use this option to send plot files (.plt format) to the 300.

Open Settings File

Opens custom settings for the 300 that have been stored with the *Save Settings As...* option below. Once the settings file is loaded use the Send Settings buttons described in the Screen Menu Options Section.

Save Settings As...

Allows custom settings to be saved to a file so that they can be sent to the 300 at a later time. To retrieve these files use *Send Settings File* explained above.

Exit

Close the Ioline Control Center.

Setup

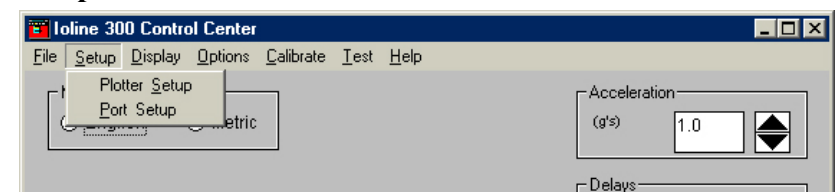


Fig. 21 - Setup Menu

Plotter Setup

Allows selection of the plotter model and COM port.

Com Port Setup

Provides a list of COM ports to select from.

Display

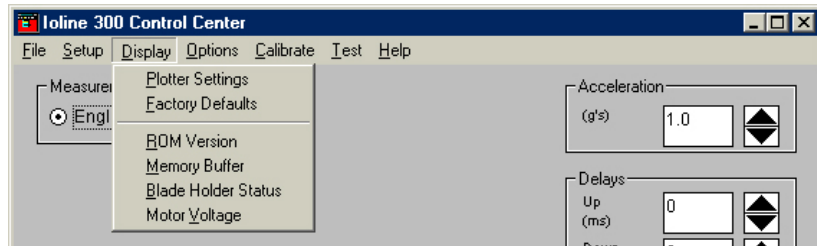


Fig. 22 - Display Menu.

Plotter Settings

Replaces all of the Displayed values with the current settings stored in the plotter.

Factory Defaults

Replaces all of the Displayed values with the factory defaults. A dialog box will appear that allows these values to be sent to the plotter.

ROM Version

Displays the current ROM version installed in the plotter.

Memory Buffer

Displays the amount of buffer memory on the logic board. This value should be 1024 K (1 Meg)

Blade Holder Status

Displays whether or not the blade holder is installed.

Motor Voltage

Displays the voltage of the motors that are installed in the 300 cutter. This option will only work with ROM version 106882 r0 and higher.

Options

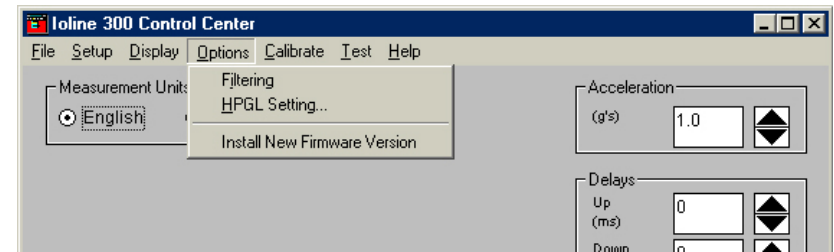


Fig. 23 - Options Menu

Filtering

Displays the filtering dialog window. Some files don't produce quality curves and line structure. Enabling the filtering option helps to smooth out some of these lines.

HPGL Setting...

Allows the 300 cutter to switch between HPGL/7475 (Lower Left), and HPGL/7596 (Center origin).

Install New Firmware version

- 1) Turn the cutter on, and let it initialize. Press "Set Origin", the light on the keypad will turn Green.
- 2) Copy the file that was sent to you by Ioline Tech Support or downloaded off the Ioline web site to the hard drive of the computer that is connected to the 300 System Cutter.
- 3) Open the Ioline Control Center.
- 4) When the Control Center is open, Click on "Options"/ "Install New Firmware Version".
- 5) Click on "Begin Version Install".
- 6) The next window shows the file structure on your computer. Find the file that was sent to you (.BIN file). Click on the file, and click on "OK".
- 7) The plotter will make a beep sound, and the light will turn off. The new firmware will now start to load into the plotter. When it's done, close the Ioline Control Center, and turn the plotter off.
- 8) Reset the plotter by turning it back on while pressing and holding the "UP" arrow key on the keypad of the 300 System. The button can be let go when the carriage starts to move to the left.

Note: After the 300 cutter is reset back to factory defaults any user settings (such as Acceleration, Up & Down Delay, Blade offset and Angle), and calibration are reset. *If you need to re-calibrate the machine See 'Calibrate Plotter' on Page 16.*

Calibration

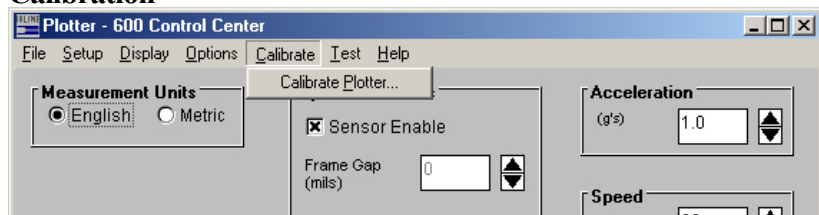


Fig. 24 - Options Menu

Calibrate Plotter

Provides methods to calibrate the cutter for maximum accuracy. The 300 System is calibrated at the factory, and does not need dimensional calibration. If you feel the cutter is not dimensionally accurate, contact Ioline Tech Support.

Test

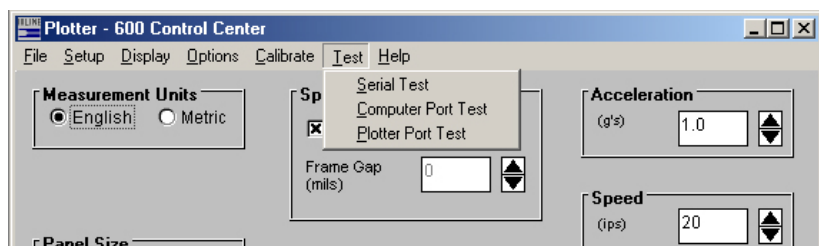


Fig. 25 - Options Menu

Serial Test

Tests the serial connection between the plotter and the computer. See the "Communication Testing" section for further information.

Computer Port Test.

Tests the serial port on the computer with a special tool available from Ioline. See Page 26, "Communication Testing" for further information.

Plotter Port Test.

Tests the serial port on the plotter with a special tool available from Ioline. See the "Communication Testing" section for further information.

Help

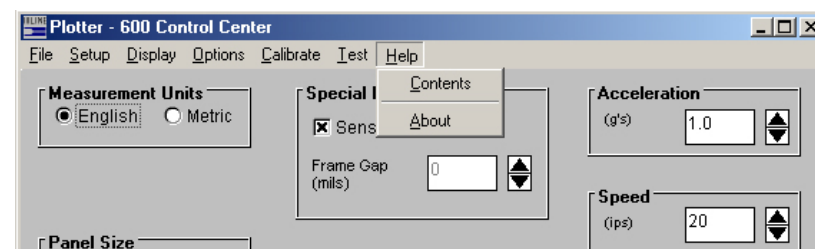


Fig. 26 - Help Menu

Contents

Lists the contents of the help screen.

About

Provides revision information about the Ioline Control Center software.

CUTTING MATERIAL

Before cutting material, turn the cutter on, load the material, install a blade holder, and set an origin. These steps are outlined below. In most cases the design files are sent directly from the 301 software to the plotter. If necessary, use the **Ioline Control Center** software to send design files, adjust settings and test cutter communication.

Loading the Material

- 1) Press the **Start/Stop** button on the keypad, until the light turns red. The cutter is now off-line and the arrow keys can be used to position the blade holder. The up and down arrow keys move the table back and forth, while the left & right arrow keys move the carriage side to side (the light must be RED for this to work). Press the “Down” arrow key to move the table forward.
- 2) Remove the tray from the machine and place on a flat surface. Pull away the backing paper from one corner, and feel the adhesive on both sides of the sheet. One side is stickier than the other (Light Tack Sheet ONLY), place the “Stronger” adhesive side on the tray. There are corner guides on the front edge of the tray to help during placement.
- 3) Remove the paper cover sheet from the adhesive sheet on the removable tray. **Note:** *Keep this cover sheet clean so you can reapply it after you are done cutting for the day. This cover keeps dust, fibers, and air away from the adhesive surface. When not in use this will extend the life of the adhesive sheet.*
- 4) Put the material you wish to cut on the adhesive surface and press it down a little at a time, starting at one end and pushing out any bubbles as you go. **Caution:** *Make sure the material being cut does not extend beyond the edge of the table where it could get caught up with the workings of the cutter. DO NOT cut regular paper, cardboard, or any material with many loose fibers on the bottom side (adhesive side). Such materials will stick permanently to the adhesive surface, reducing the life of the adhesive sheet.*
- 5) Place the removable tray in the table assembly, and tighten the thumb screws on the front of the removable tray.
- 6) Locate the blade holder in the accessory kit of the 300 cutter.

Installing a Blade and the Blade Foot

Note: Using a hard surface to insert the blade may damage it.

A blade and a blade holder are included in the accessory kit. The blades are sharp and the tips can chip or break very easily. Be very careful when handling the blades. To install the blade and blade foot:

1. Remove the foot from the assembly by unscrewing it counterclockwise.
2. Slide the blade into the hole in the blade holder until it bottoms out. The blade should spin freely. Notice the pin on the other side of the blade holder, it should be sticking out about 3/16”.
3. Screw the foot onto the blade holder (clockwise). Stop before the blade emerges from the hole in the foot.

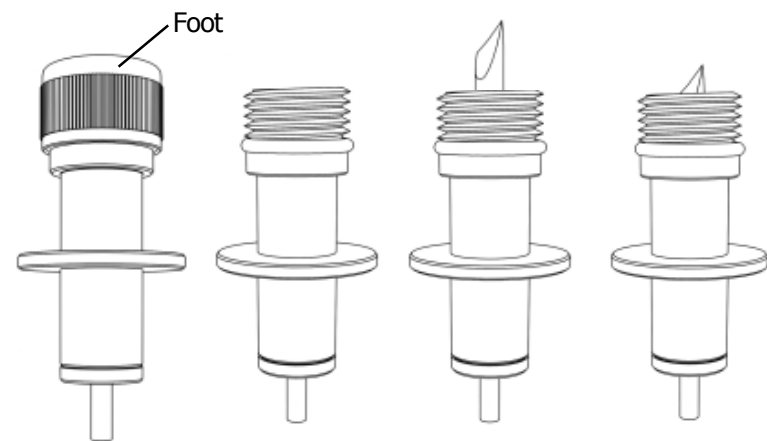


Fig. 27 - Installing the Blade and the Blade Foot.

Installing a Blade Holder or Pen

1. Rotate the thumb screw on the carriage until there is enough room to insert the blade holder or pen.
2. If using a blade holder or plotter pen, slip the flange into the slot in the carriage jaw. If using a regular pen, position the tip 1/10 inch off of the platen when the jaw is in the up position. The cutter can hold any pen with a maximum barrel diameter of 7/8" (22 mm).
3. Tighten the thumb screw until the blade or pen is secure.

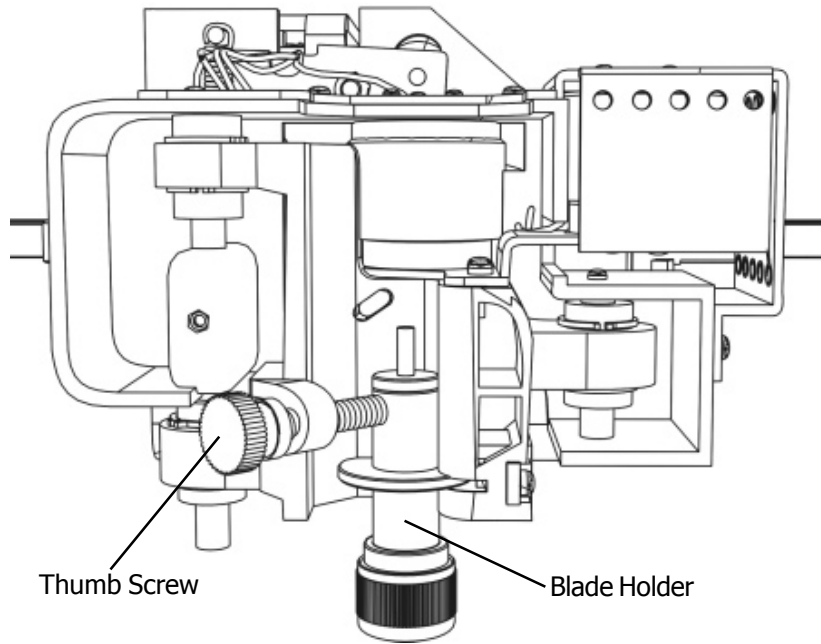


Fig. 28 - Blade Holder in the Carriage Jaw. **Note:** Carriage is shown with cover removed

Adjusting Blade Exposure and Force

Properly adjust blade exposure and force to achieve good cutting results.

Adjusting Blade Exposure:

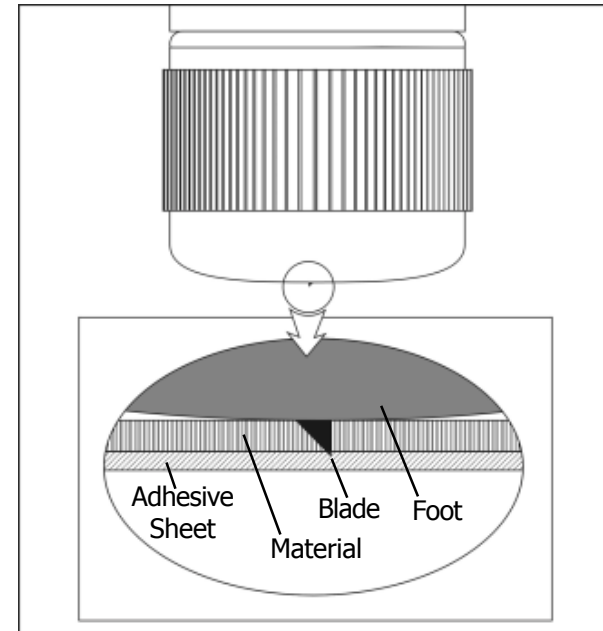
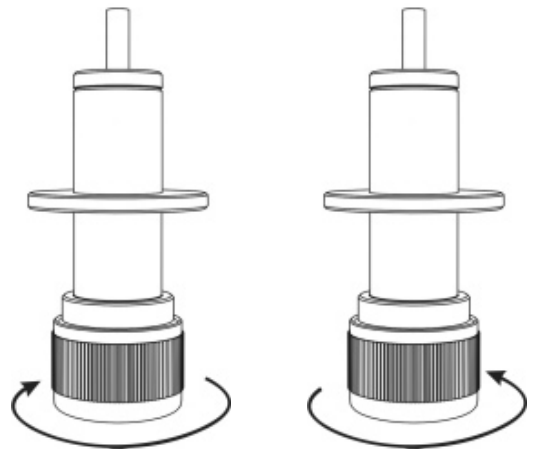


Fig. 29 - Proper blade exposure that lightly scores the backing.

1. On the keypad, turn the **Force** knob clockwise to maximum. Set the **Speed** to 50%. The maximum force setting is 700 in the Control Center and is not adjustable.
2. Check that the blade tip is not visible when viewing the blade from the side. This technique approaches the correct blade exposure from too little with no chance of having too much (which could damage the blade).
3. Press the **Start/Stop** button on the front panel until the LED is red. Move the carriage until the blade is near the right edge of the material.
4. Press the **Test Cut** key for one second. The cutter will cut a test cut pattern. There will be no cutting if the initial foot adjustment was correct.



Less Blade Exposure

More Blade Exposure

Fig. 30 - Turning the foot to add or subtract blade exposure.

5. Turn the foot 1/8 turn upward (clockwise from below). Press the **Test Cut** key. **Note:** *Successive cuts will automatically be positioned to the left of the previous test cut.*
6. Continue increasing the blade exposure and making test cuts. The test design will completely separate from the surrounding material and lightly score the adhesive sheet when enough blade is exposed.

Force Adjustment:

Every type of material requires different cutting force. Before adjusting force make sure that the blade exposure is adjusted first. See instructions above.

1. Turn the force knob down slightly from maximum, about one mark, and repeat the test cut. Use full force if the test cut is not complete.
2. If the test cut is complete, turn the force down again and repeat the test cut. Continue until the cut is incomplete. This indicates that there is not enough force to push the exposed blade fully into the material. At this point turn the force knob up one mark, which is just enough.

Verification:

1. Press the **Test Cut** key for 3 seconds. The cutter will cut a 1.9 inch x 7.1 inch design (the Ioline logo).
2. If the sign does not separate cleanly and leave a light scoring on the adhesive sheet, try another 1/8 turn upward (counter clockwise from above) of blade exposure and a very slight increase in force.

Sending a Cut/Plot File to the 300 System Cutter

Always load the cutter and make test cuts to determine the correct settings before sending any files. See the **Adjusting Blade Exposure** and **Force** sections for more details.

Important: Make sure that the carriage and material are in the proper position and that an origin is set by pressing “*Set Origin*” on the keypad (LED is green).

Send the file directly from the 301 software following the directions in the *301 User Guide* or;

From the **Ioline Control Center Software:**

1. From the menu bar select **File, Send Cut/Plot File**.
2. Either enter the path and file name of the cut or select the correct location from the directory/file lists in the dialog box. For example, the path might be:

C:\IOLINE\<filename>.plt.

4. Select OK.

Pausing Cutting

1. Press the **Start/Stop** key to place the signcutter in **Stop** mode (red LED).
2. When cutting is interrupted, the carriage and material can be moved with the keypad **Arrow** keys.
3. Press the **Start/Stop** key to resume cutting. The 300 Cutter will return to the original cutting position and continue plotting where it stopped. The keypad LED will change from red to green.

Canceling a Cut

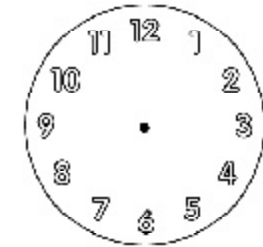
1. Press the **Start/Stop** key to place the 300 in **Stop** mode (red LED).
2. Cancel the cut from the design software (refer to the design software manual or consult software dealer) or cancel the cut in the Control Center software by clicking on the **Abort** button in the **Send File** window. **Note:** If this step is skipped the cut will continue when a new origin is set.
3. Press the **Set Origin** key to make the signcutter delete the cut data it has already received but has not yet plotted.

Suggested Settings

There are many variables that determine cutter output quality. Ioline recommends using low force and speed settings when making the initial test cuts. Gradually increase these settings until the best values for the material are found. Refer to Table 1 below for settings for a variety of material types. Force values are for starting reference only. These settings may vary due to manufacturer, color, age, and temperature of the material.

Speed & Force

(Settings relate to a clock)



Material	Thickness	Blade	Acceleration	Speed	Force
Stahl's Tackle Twill (with heat sensitive backing)	16 mils	30/45 degree	1.0	5:00	1:00
Stahl's Tackle twill (with Pressure sensitive backing)	16 mils	30/45 degree	1.0	5:00	1:00
Stahl's Thermal Film	7 mils	45 degree	1.0	12:00	11:00
Stahl's Thermal Flock	25 mils	45 degree	1.0	12:00	11:00
Elastic Twill	15 mils	30/45 degree	0.5	10:00	3:00
Cotton Acrylic	11 mils	30/45 degree	0.5	9:00	2:00
Rayon	27 mils	30/45 degree	0.5	8:00	3:00
Felt (Without backing)	23 mils	30 degree	0.5	10:00	5:00
Soft Felt (without backing)	37 mils	30 degree	0.5	10:00	5:00
Soft Felt (With Backing)	26 mils	30 degree	0.5	10:00	3:00
Felt (with backing)	43 mils	30 degree	0.5	12:00	3:00
Foam Fabric	31 mils	30 degree	0.5	12:00	2:00
Light Canvas	18 mils	30/45 degree	0.5	1:00	5:00
Stretch Knit Fabric	19 mils	30 degree	0.5	9:00	12:00
Thin Textile Suede	38 mils	30/45 degree	0.5	2:00	12:00
Medium Textile Suede	40 mils	30/45 degree	0.5	5:00	2:00
Imitation Suede	19 mils	30/45 degree	0.5	5:00	2:00
Strap Twill	24 mils	30/45 degree	0.5	9:00	5:00
Ideal Stencil "Oil-Board"	17 mils	45 degree	1.0	5:00	5:00
Stencil Mask	11 mils	45 degree	1.0	5:00	5:00
Neon Mask	8 mils	30/45 degree	1.0	5:00	12:00
Transparency Film	5 mils	45 degree	1.0	5:00	9:00

Fig. 31 - Suggested Settings for Different Material Types.

ADVANCED CUTTING

How to “KISS-CUT”

Kiss cutting is the process of cutting through one layer of a stack of material and not cutting through the layer(s) below. Typically the upper layer(s) has a pressure sensitive backside which adheres to the lower layer of material.

Kiss cutting creates more scrap material for the upper layer(s), (compared to cutting individual layers and hand placing them on the lower layers) but can result in a considerable time savings since multiple layers do not need to be aligned and the placement stitch for the upper layer may be eliminated from the embroidery process.

Prepare to Cut

1. Place bottom material layer onto adhesive sheet and smooth it flat. Place the foreground material on top of the background material making sure the sticky side is down.
 2. Load blade holder into Carriage Jaw.
 3. Adjust Blade Holder as described in the quick start guide, or the previous section. (Test with single button test cut.) Adjust blade exposure and cutting force so that only the material is cut. Weed the test cut, the bottom layer of twill should be scored lightly. If it cuts through both layers the blade is out too much.
- Note:** It is recommended that the materials are of similar type and thickness so the blade does not need readjustment.
4. Once blade is adjusted, use the keypad **Arrow** keys to position the Table and Carriage so that the Blade Holder is over the lower right corner of the material (lower left origin of plot file).
 5. Press **Set Origin** on the Keypad to obtain a green keypad light.

Send first cut file

1. Open the 301 software.
2. Select the directory and file you wish to open (See *Fig. 33*). Double click on the file or select the file and click on **Load Import File**.
3. Select **Design Setup**.
4. Under the Color Setup heading, select **K-C ALL** (Kiss Cut All). (See *Fig. 33*)
5. Under the **Color Setup** heading, select the color that corresponds to the “Top” layer of the design to be cut. This should be the profile with the smallest outline. (See *Fig. 33*)
6. Select OK.
7. Select Send to Cutter.
8. Select OK.

Send second cut file

1. When the first cut is done, press the **Start/Stop** button (the light should turn “Red”) and move the tray forward. Weed away the excess material around the top letter.
2. Press **Start/Stop** button on the keypad, the light should turn back to green and the tray and head will move back to the original starting point.
3. Under the **Color Setup** heading, select the color that corresponds to the next layer of the design to be cut and deselect the color that was just cut. This profile should have a larger outline than the one previously cut.
4. Select **OK**.
5. Select **Send to Cutter**.
6. After it has finished cutting, weed away the excess material.

Note: As an alternative method, you can also cut the pieces in reverse order. For example, cut out the background piece(s) first, then lay the top piece of fabric on and cut those pieces out. This method allows you to 1) cut a whole tray of Kiss-Cuts, and weed the two pieces of fabric together, 2) No blade foot adjustment required for each layer, 3) Can be cut normal, or mirrored if all you have is twill with a paper backing.

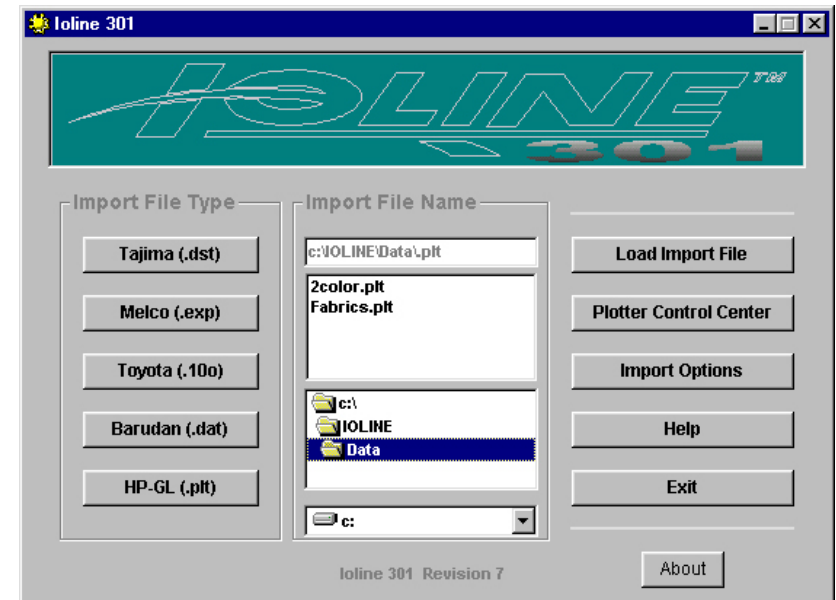


Fig. 32 - 301 “Main” Window

Design Setup

Adjust Imported Design

☒ Needle down After first stitch following jump(s)

☒ Remove extra pen up movement (jumps)

☒ Remove Segments less than: in. mm.

Rotate: ☒ 0% ☐ 90% ☐ 180% ☐ 270%

Mirror: ☒ None ☐ Horizontal ☐ Vertical

Ruler Type: ☒ Inches ☐ Centimeter

Margins and Copies

Design Left: in. cm.

Margins: Bottom: in. cm.

☐ Maximum Copies Horiz. Count:

☒ Set Copy Count(s) Vert. Count:

Margins Between Copies: Horiz. Margin: in. cm.

Vert. Margin: in. cm.

Material Dimensions

Horz: in. cm.

Vert: in. cm.

Def.

Cutter Size

☐ 18 x 24

☒ 18 x 30

Color Setup

Included Layers	Sequence
<input type="checkbox"/> color 0	<input type="text" value="0"/>
<input checked="" type="checkbox"/> color 1	<input type="text" value="1"/>

☐ Show ALL colors

☐ Show FIRST color only

K-C color# ☒ K-C ALL

Save Setup Recall Setup Default Setup

Escape OK

Step 5
Send first cut file
Step 3
Send second cut file

Step 4
Send first cut file

Fig 33 - Ioline 301 "Design Setup" Window

COMMUNICATION TESTING

There are three communication diagnostic tests available in the Control Center. These tests are designed to help determine if a communication problem exists and to isolate where the problem is occurring.

A diagnostic module is required to run two of these tests. It will work on both the computer and signcutter serial (COM) ports. It is available from Ioline or an authorized dealer.

Communication Test

This test will determine if communication is working between the computer and the plotter on the parallel (LPT) or serial (COM) ports. Run this test from the Control Center, Test menu. The diagnostic module is not required to run this test.

1. Turn the plotter off. Connect the plotter to the computer with either a serial or parallel port cable. See the section *Connect the 300 System cutter to the Computer* in the *Installation* chapter for more details.
2. Start the Ioline Control Center. Select **Test, Communication Test** from the menu bar at the top of the window.
3. Turn on the 300 cutter while holding down the **Test Cut** key on the keypad. Hold down the **Test Cut** key until the cutter beeps and the light flashes three times. The machine is now in **Test Mode**.
4. If testing the serial (COM) port, press the **Start/Stop** key on the cutter and verify that the handshake line (CTS) status displayed on the computer screen toggles **On/Off**. Leave the handshake line **On**. This is not necessary for the parallel (LPT) port.
5. Press the **Repeat** key to switch the cutter into **Echo** mode. The green light will come on.
6. Press a key on the computer and verify that the character transmitted equals the character received. If the characters match then the connection between the cutter and computer is working properly.
7. Select Exit after the communication test is complete.
8. Turn off the cutter at the end of the test. This will exit **Test Mode**.
9. The next two tests are not necessary if serial (COM) port testing is successful.

Testing the 300 System cutter Serial Port

The diagnostic module is required for this test.

1. Connect the diagnostic module directly to the 300 cutter COM port (bottom).
2. From the Control Center main menu, select **Test, Plotter Port Test**.
3. Turn on the cutter while holding down the **Test Cut** key on the keypad. Hold down the **Test Cut** key until the cutter beeps and the light flashes three times. The cutter is now in **Test Mode**.
4. Press any **Arrow** key on the keypad to transmit and receive characters. Verify that the cutter beeps.
5. Turn off the cutter at the end of the test. This will exit **Test Mode**. If this test fails, the cutter port is faulty.

Testing the Computer Serial Port

The diagnostic module is required for this test.

1. Connect the diagnostic module directly to the COM port on the computer. If the computer COM port has a nine pin connector, use a 9 pin to 25 pin adapter between the COM port and diagnostic module.
2. From the Control Center main menu, select **Test, Computer Port Test**.
3. Verify that the COM port selected is the correct one. If it is not, select the proper COM Port.
4. Verify the CTS handshake line is on.
5. Press any key on the computer keyboard and verify that the character transmitted equals the character received.
6. Select the **Exit** button at the end of the test. This will exit **Test Mode**. If this test fails, the computer port is faulty.

REPAIR AND MAINTENANCE

Cleaning the Traverse Extrusion and Carriage Wheels

As dust and debris accumulate on the traverse extrusion it will have to be wiped off with an isopropyl (pharmacy) alcohol dampened, lint-free cloth.

With a clean cloth dampened with Isopropyl alcohol wipe the traverse extrusion where the carriage wheels ride on the rail. Move the carriage side to side while wiping the traverse so as to clean the entire surface. See *the first figure* at the beginning of this guide for the location of the traverse extrusion.

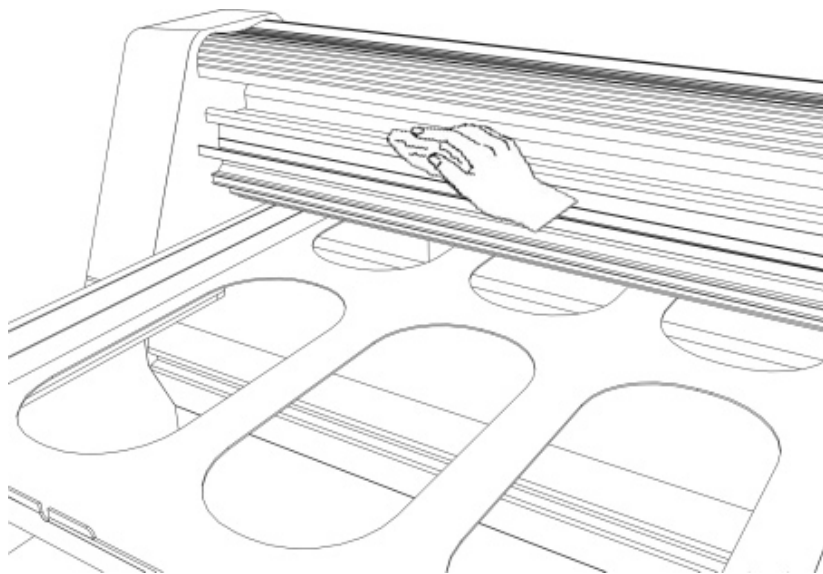


Fig 34 - Cleaning the traverse extrusion

Cleaning the Blade Holder

When the machine cuts twill or any other soft weave fabric the blade holder has a tendency to build up “Fuzz” in the hole where the blade rotates. The blade itself is described as a “Drag Knife”, and must rotate in the holder without restriction in order for it to cut properly. Remove the blade holder after each sheet of fabric, and remove any fuzz build up. This will ensure the cutting quality will not be affected by the blade rotation.



Fig 35 - A clean blade holder

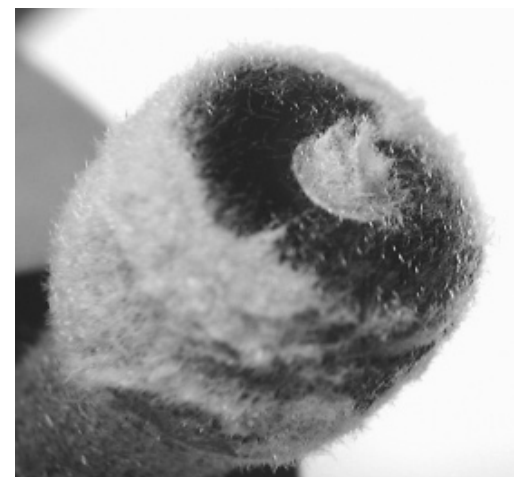


Fig 36 -After several sheets of twill without cleaning

General Disassembly Procedures

The following procedures describe the basic disassembly of the 300 system cutter to gain access to the keypad, power, and drive components. Please pay close attention to the **Warning** and **Caution** notes.

Removing the End Covers

1. Turn off the 300 and unplug the computer data, and power cables.
2. Remove the two black phillips head screws, and the single silver phillips head screw on the bottom of the cover, then remove the right cover. To access the rear black screw, you may have to move the tray forward. *See figure 37 below.*
3. Remove the two black phillips head screws, and remove the left cover. *See figure 38 on the next page.*

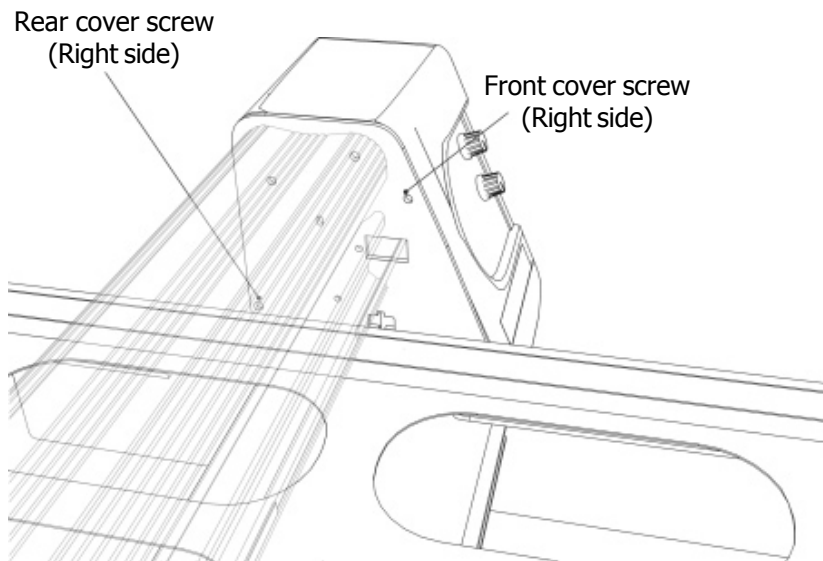


Fig 37 -Right side cover screws (Black phillips head)

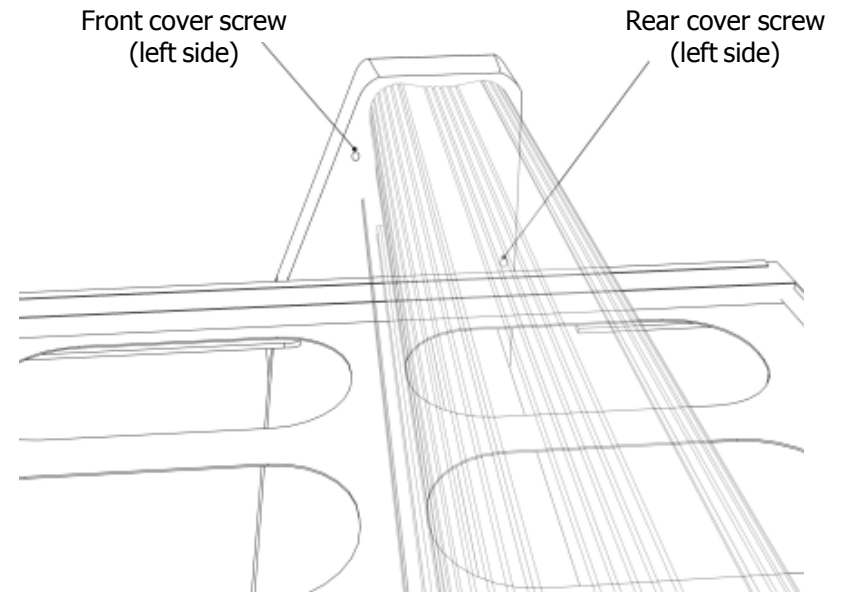


Fig 38 - Left side cover screws (Black phillips head)

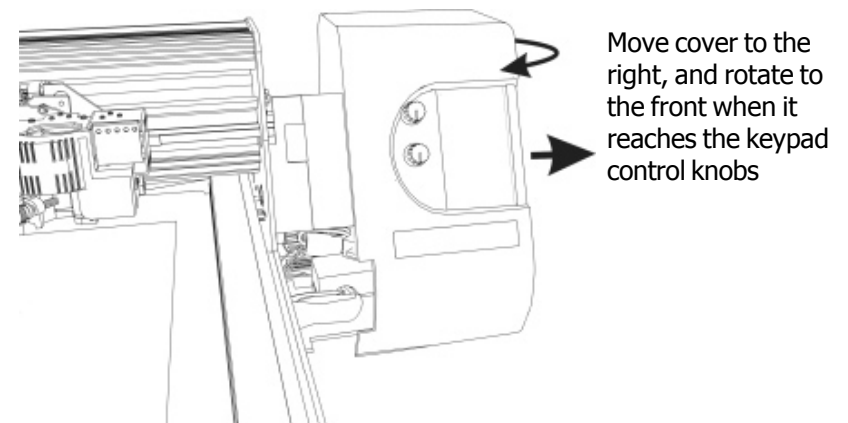


Fig 39 - Removing the right side cover

Removing the Bottom Cover for Internal Access

WARNING

- *The 300 system cutter is very heavy and could cause an injury if it falls. Make sure that another person assists with moving the cutter.*
- *When the bottom cover of the 300 is removed and the power is on there is an electric shock hazard. These diagnostic procedures should only be performed by qualified technical personnel or individuals that are aware of safe practices with 110 VAC and 220 VAC devices.*



Do not lift the 300 by its top dust cover, or the tray assembly. Use the bottom surfaces of the end plates for lifting and moving the plotter.

Tools Required:

- Phillips head screw driver.
- Two people capable of lifting 50 pounds each.
- Grounding strap (optional).

Perform the Following Disassembly:

1. Turn the power off, and disconnect the computer data, and power cables.
2. Move the carriage assembly to the right side of the cutter.
3. Remove the right side cover. *See Removing the covers earlier in this guide.*
4. Use your assistant to help you flip the 300 cutter over onto its top dust cover. Use the right side cover to place under the tray so it doesn't fall over while it's on its top. *See fig. 40*
5. Remove the phillips screws along the bottom cover's edge. *See Fig. 41*
6. While removing the bottom cover, take care in unplugging the fan wire from the logic board

Important: Call Ioline Customer Service or consult the 300 Service Manual before proceeding any further.

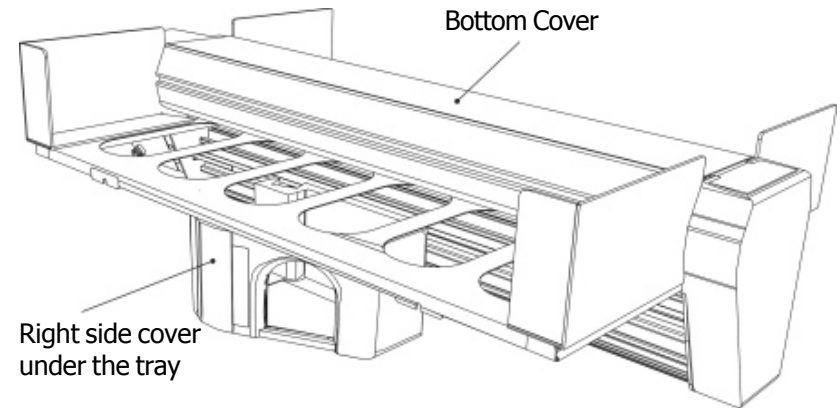


Fig 40 - Turn the 300 over, and place right side cover under tray

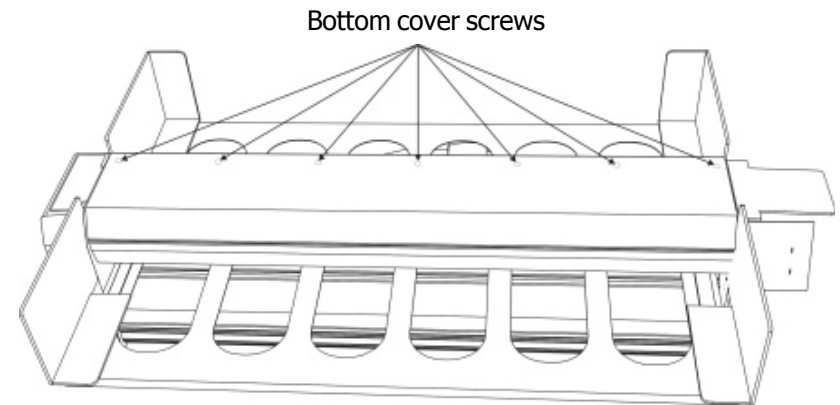


Fig 41 - Bottom cover screws

TROUBLESHOOTING

If the system is not working correctly the problem could be with the computer, the cable, the design software, or with the cutter. Changes to the computer operating system or the installation of new peripherals or software might cause conflicts. If the computer or the design software cause a problem, consult the computer or software manuals or call the manufacturer or dealer.

If the problem is with the cutter, begin by making sure power is on and that the cable between the machines is connected correctly. Test the connection with the methods described in the *Communication Testing* section. Consult the following chart for more detailed troubleshooting techniques:

Common Problems

Problem	Cause	Solution
The cut file doesn't start in the correct place on the tray.	The "Origin" has not been set.	Press the " Set Origin " button on the keypad with the blade positioned where the cut file should start.
A file has been sent from the software, but the 300 won't cut.	A communication problem has occurred or the 300 is in "Stop" mode (red LED).	Make sure the serial or parallel port on the computer and the 300 are configured properly. Or press the " Start/Stop " button on the keypad to obtain a green LED.







Error Messages




Error messages that are specific to the 300 are divided into two categories; software errors and LED codes. Software errors present themselves on the computer screen and usually indicate a communication problem. LED codes are visible below the keypad on the front panel of the 300 and can be green, red or a combination of both. The LED code table in this section is for finding the cause of obvious external or communication problems. Later in the chapter a more comprehensive LED index is available for complex mechanical and electronic difficulties. Other errors can occur with the operating system or the design software and should be resolved with the software vendor.

Software Errors:

Error Message	Problem	Solution
<i>Could not open COMx or LPTx</i>	The software could not locate the cutter on the specified COM or LPT port.	Verify the cutter is connected to that port, or check that the operating system recognizes the port.
<i>Green light not on or cutter not connected to COMx or LPTx</i>	The software opened the port but could not get a response from the cutter.	Be sure the cutter is connected to the selected port, that the cutters green LED is on, and that the cable connecting the computer to the cutter is functioning. Due to the nature of serial and parallel communication, it is possible to get this message if an attempt is made to interact with the cutter while it's cutting. If this is the case, wait for the 300 to finish cutting and send the file again.
<i>Setup COM port and check plotter present.</i>	The last operation requires that the plotter be connected to the port but the software could not find it.	Be sure the cutter is connected to the selected port, that the cutters green LED is on, and that the cable connecting the computer to the cutter is functioning.
<i>The plotter that you selected is not the same as the one connected to your computer.</i>	The Control Center cannot match the cutter that was chosen at the start up with the one found during initialization.	Select the correct plotter from the list.

L.E.D Codes

LED Sequence	Problem	Solution
 <div>3+ Second pause then repeat</div>	1. Buffer Overflow 2. Communication Problems 3. Defective RS-232 Chip.	1. Perform cutter reset as outlined later in this chapter. 2. Perform communication test as outlined later in this chapter. 3. Replace the RS-232 chip.
 <div>3+ Second pause then repeat</div>	Outdated Firmware.	Check the Firmware version, install firmware if needed. Contact Ioline Tech Support
 <div>Constantly Repeating</div>	Plotter Language syntax error	The file being sent to the cutter is not of the same language that the cutter is looking for. Open the Ioline Control Center, and run a test file. If the error doesn't happen again, check the original file for problems.
 <div>3+ Second pause then repeat</div>	Carriage ("Y" axis) jam.	Check to make sure the carriage moves side to side freely, and remove all objects causing the jam to occur.
 <div>3+ Second pause then repeat</div>	Table ("X" Axis) jam	Check to make sure the tray moves in and out freely, and remove any objects causing the jam to occur.
 <div>2 Red Flash 2 Green Flash repeat</div>	Logic Board Error	Call Customer Service

Legend	
	Solid GREEN Light Emitting Diode (LED) on the keypad
	Blinking GREEN Light Emitting Diode (LED) on the keypad
	Blinking RED Light Emitting Diode (LED) on the keypad

Troubleshooting the Parallel Port

(Only available on some cutters with a parallel port on the back)

1. Click the **Start** button, select Settings and then click Printers to open the Printers window.
2. Right Click the printer icon for a network printer and select Properties.
3. Click on the 'Capture Settings' or 'Details' tab.
4. Click on 'End Capture'. Select LPT 1 and click 'OK'.
5. Assign the network printer path to another parallel port designation like LPT 3. Set the printer to use that port or select a network print que path.

BIOS settings can also have an effect on parallel port performance. The cutter supports only **SPP**, or **Normal** parallel port communication. ECP and EPP modes are not supported. These instructions include editing the PC BIOS to ensure that the port is in the proper mode prior to starting Windows.

1. Click the **Start** button, select Settings and then click Control Panel to open the Control Panel window.
2. Double Click the System icon to open the System window and then click the Device Manager tab.
3. Remove the parallel port by clicking Ports, selecting the port and clicking the Remove button.
4. Shut down Windows.
5. Restart or Reset the computer.
6. Enter the PC BIOS setup. This is usually done by hitting the DEL, F1 or ESC key during the boot sequence. Consult the computer manuals or contact the manufacturer for more information about entering BIOS setup.
7. Find the parallel port setup options and set the port to be **SPP**, or **Normal** (not ECP or EPP). Also, make sure there is no DMA activity over with the port.
8. Save the BIOS settings and exit setup.
9. Restart the computer and allow Windows to start up. Windows should find the port and install it using the new settings.

END NOTES

Getting Help

Ioline is committed to providing the highest quality service and support to its customers. If you need assistance with an Ioline cutter, a number of resources are available:

1. First, refer to this User Guide for answers to your specific questions.
2. Consult the support section of the Ioline web site: www.ioline.com.
3. For additional assistance, contact the dealer you purchased the machine from. Contact information is listed on the last page of this User Guide.

Any warranty servicing of this product **not** specifically described in this manual must be authorized in writing by Ioline Customer Service. You may obtain service by calling or faxing Ioline Customer Service. The technicians will help you determine the nature of the problem. If factory repair is necessary, you will receive a RMA (Return Material Authorization). Please gather the information indicated in the next column before contacting Ioline or your dealer.

1. Carefully package the 300 System cutter in its original container or equivalent. You may purchase shipping containers from Ioline by contacting Ioline Customer Service. **Ioline is not responsible for any damage due to inadequate or improper packaging.**
2. Carefully wrap and secure all items in the shipping container to prevent damage. Seal the container and note the RMA near the address block.
3. Ship the container using FED-EX or another approved carrier. **COD SHIPMENTS ARE NOT ACCEPTED.** You will be contacted prior to the start of work with an estimate of repair cost. All repairs are warranted for 90 days.

Please gather the following information about your cutter before contacting Ioline for technical support.

Name: _____

Company Name: _____

Phone Number: _____

Fax: _____

Model: _____

Serial Number: _____

Date of Purchase: _____

Dealer: _____

Type of Material Used: _____

Type of Computer: _____

Type of design software: _____

New Software or Peripherals: _____

Service History (if any): _____

Note: Ioline Customer Service contact information is listed on the last page of this section.

THE FCC WANTS YOU TO KNOW...

This equipment generates and uses radio frequency energy and, if not installed and used properly (in strict accordance with manufacturer instructions), it may cause interference to radio and television reception. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. If this equipment does cause interference to radio or television reception - which can be determined by turning the equipment off and on - you are encouraged to try to correct the problem by one or more of the following measures:

- Use only shielded interface cables.
- Reorient the receiving antenna.
- Relocate the host computer with respect to the receiver.
- Move the host computer away from the receiver.
- Plug the host computer into a different outlet so that the host computer and receiver are on different branch circuits.

If necessary, consult the dealer or an experienced radio/television technician for additional suggestions. The following booklet, prepared by the Federal Communications Commission, is a helpful reference:

How To Identify and Resolve Radio-TV Interference Problems:

The stock number is: 004-000-00345-4

This booklet is available from:

U.S. Government Printing Office

Washington, D.C. 20402

YOUR COMMENTS ARE REQUESTED

Ioline Corporation is interested in comments on our documentation and products. Please send corrections or suggestions to:

IOLINE CORPORATION
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Woodinville, WA 98072 USA
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Fax: (425) 398-8383
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This User Guide is provided for informational purposes only. The contents are subject to change without notice, and Ioline Corporation assumes no responsibility for any errors that may be contained herein. No part of this User Guide may be copied, disseminated, or distributed without the express written consent of Ioline Corporation.

Customer Service

Ioline Corporation is committed to providing quality service and support to our customers. If you need assistance with an Ioline product, contact your local dealer or Ioline authorized service center. You may also contact the

Ioline Customer Service Department
Monday through Friday
7:00 A.M. - 5:00 P.M. U.S. Pacific Time
Voice: (425) 398-8282
Fax: (425) 398-8383
techsupport@ioline.com
www.ioline.com

Ioline has many years of experience working with designers. Feel free to contact us if you have questions or to share information.

Limit of Liability Statement

It is the responsibility of the operator of the cutter to monitor the performance of the cutter and maintain it in proper working condition by following the instructions in this User Guide. It is the responsibility of the operator of the cutter to follow all safety precautions and warnings that are described in this user guide. Ioline is not responsible for injuries that may occur as a result of unsafe operating procedures. Ioline is not responsible for substandard operational performance as a result of failure to maintain the cutter as described in this user guide.

INDEX

A

About 16
Acceleration 13
Adhesive Sheet 3
Arrow Keys 11

B

Blade Foot 17
Blade Holder 18, 24
Blade holder 5
blade holder 17
Blade Holder Status 15

C

Calibrate Plotter 16
Calibration 16
Carriage 2, 18
Carriage Jaw 18
Carriage Wheels 24
Color Setup 21
Com Port Setup 15
Communication Test 23
Computer Port Test. 16
Computer Serial Port 23
Contents 16

D

Design Setup. 21
Display 15
Dongle 9
Dust Cover 2

E

End Covers 25
Error Messages 28
Exit 14
Exposure 18

F

Factory Defaults 15
File 14
Filtering 15
Fixed Tray 2
Force 11, 14, 18, 20
Force Adjustment 19

H

Hardlock 9
Help 16
Holder Status 15
HPGL Setting... 15

I

Install New Firmware version 15

K

Keypad 2, 3, 11
KISS-CUT 21

L

L.E.D Codes 29
Left Cover 3
Load Import File. 21
Logic Board 3

M

Measurement Units 13
Memory Buffer 15
Minimum Angle 14
Motor Voltage 15

O

Open Settings File 14
Options 15
Overcut 14

P

Panel Size 13

Parallel Port 29
Parallel port 5
Permanent 13
Plotter Port Test. 16
Plotter Settings 15
Plotter Setup 15
Power Supply 3
Power switch 5

R

Rear Panel Assembly 3
Removable tray 2
Repeat 12
Right Cover 3
Right Side Cover 2
ROM Version 15

S

Save Settings As... 14
Scale 13
Send Cut/Plot File 14
Send to Cutter 21
serial cable 9
Serial Port 23
Serial Test 16
Set Origin 11, 21
Settings 20
Setup 14
Speed 11, 20
Start/Stop 11, 17, 21
Steering Arc 14

T

Table Assembly 3
Temporary 13
Test 16
Test Cut 12
Thumb Screw 18
Traverse 2, 3
Traverse Extrusion 24
Troubleshooting 27, 29

U

Up/Down Delays 13
Update Display 13

V

Voice-coil 5

Y

“Y” Axis Belt 5